

## REMARKS

Claims 84, 98, and 99 have been amended. The revision to Claim 98 corrects its dependency. The revisions to Claims 84 and 99 are dealt with below.

Claims 369 - 379 have been added to claim the invention with more particularity. Accordingly, Claims 1 - 3, 6, 7, 10 - 17, 22, 26 - 32, 35 - 40, 84, 97 - 99, 114, 266, 281, 289, 310, 319, and 369 - 379 are now pending.

Claims 84, 97 - 99, 114, and 281 have been rejected under 35 USC 102(e) as anticipated by Ito, U.S. Patent 6,236,156 B1. This rejection is respectfully traversed.

Ito describes several getter-containing devices. In Ito's Related-Art section, Ito describes with reference to Fig. 2 a flat-panel cathode-ray tube ("CRT") display in which conical electron-emissive elements 113 are situated on cathode electrode 112 and substantially in openings extending through lower insulator layer 114 likewise situated on electrode 112. Electron-emissive elements 113 are exposed through openings in gate electrode 115 lying on lower insulator layer 114, through openings in upper insulator layer 114 lying on gate electrode 115, and through openings in focusing electrode 116 lying on upper insulator layer 114.

Fluorescent surface 110 is situated on anode electrode 111 above, and spaced apart from, focusing electrode 116 in the flat-panel display shown in Fig. 2 of Ito. When suitable positive potentials relative to cathode electrode 112 are applied to gate electrode 115 and anode electrode 111, electron-emissive elements 113 emit electrons that impinge on fluorescent surface 110. Ito specifies in col. 2 that focusing electrode 116 consists of getter material which collects positive ions of gas released from anode electrode 111 when struck by the electrons emitted by electron-emissive elements 113.

Fig. 3 of Ito illustrates a "micro vacuum pump" in which conical protrusions 5 are situated on first conductive substrate 2 and in openings extending through insulator layer 6 likewise situated on conductive substrate 2. Protrusions 5 are exposed through openings 3a in gate electrode 3 lying on insulator layer 6. Second conductive substrate 4 is situated above, and spaced vertically apart from, gate electrode 3. At col. 5, Ito discloses that second conductive substrate 4 consists of getter material such as barium, nickel, and titanium or an alloy thereof. With suitable negative potentials relative to first conductive substrate 2 being

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applied to gate electrode 3 and gettering second conductive substrate 4, gases near protrusions 5 are ionized and collected by conductive substrate 4.

Fig. 6 of Ito illustrates a flat-panel CRT display which contains first conductive substrate 2, gate electrode 3, gettering second conductive substrate 4, protrusions 5, and insulating layer 6 all configured the same as in the micro vacuum pump of Fig. 3.

Additionally, first conductive substrate 2 lies on base part 46 in the display of Fig. 6. Further protrusions 5 are situated on first conductive substrate 2 and in openings extending through insulator layer 6 at locations to the side of those protrusions 5 situated opposite second conductive substrate 4. Further protrusions 5 are exposed through further openings 3a in further gate electrode 3 lying on insulator layer 6 to the side of first-mentioned gate electrode 3. Fluorescent film 49 lies on anode electrode 44 above, and spaced apart from, further gate electrode 3.

Anode electrode 44 and second conductive substrate 4 both lie on glass substrate 48 at locations lateral to each other in the display of Fig. 6 of Ito. Second conductive substrate 4 and underlying first-mentioned gate electrode 3 are situated in vacuum pump assembly 43 of the display. Fluorescent film 49, anode electrode 44, and underlying further gate electrode 3 are situated in image display assembly 42 of the display. In image display assembly 42, further gate electrode 3 extracts electrons from further protrusions 5 which thereby serve as electron-emissive elements. The extracted electrons are drawn to fluorescent film 49 by anode electrode 44.

Independent Claim 84, as amended, is repeated below:

84. A structure comprising:

a plate;

a group of electron-emissive elements overlying the plate;

a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate, the electron-emissive elements being exposed through respective openings in the control electrodes; and

a getter region overlying the plate at least partially between a consecutive pair of the control electrodes and contacting, or connected by directly underlying material to, the plate.

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With respect to Claim 84, the Examiner asserts on pages 2 and 3 of the Office Action that:

Figure 6 of Ito shows a structure comprising a plate (46); a group of electron-emissive elements (5) overlying the plate; a group of laterally separated control electrodes (3) for extracting electrons from the electron emissive elements or for passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate, the electron-emissive elements being exposed through respective openings (3a) in the control electrodes; and a getter region (4) overlying the plate at least partially between a consecutive pair of the control electrodes.

From this assertion, it appears that the Examiner is analogizing base part 46, gate electrodes 3, and gettering second conductive substrate 4 in the display of Fig. 6 of Ito respectively to the plate, control electrodes, and getter region of Claim 84.

Claim 84 requires that the getter region overlie the plate at least partially between a consecutive pair of the control electrodes. Ito employs only one of gate electrodes 3, the first-mentioned one, in vacuum pump assembly 43 which contains gettering second conductive substrate 4. Fig. 6 of Ito shows that conductive substrate 4 lies above that gate electrode 3. In particular, Ito's Fig. 6 shows that substrate 4 does not extend laterally beyond that gate electrode 3. Hence, substrate 4 does not overlie base part 46 between any pair of gate electrodes 3. The display in Fig. 6 of Ito does not meet the requirement of Claim 84 that the getter region overlie the plate at least partially between a consecutive pair of the control electrodes. Claim 84 is therefore not anticipated by the display in Fig. 6 of Ito.

Furthermore, Claim 84 now requires that the getter region (physically) contact the plate or be (physically) connected to it by material directly underlying the getter region. Gettering second conductive substrate 4 in the display in Fig. 6 of Ito is spaced vertically apart from underlying gate electrode 3 and thus from base part 46. As a result, Ito's display in Fig. 6 does not meet the requirement of Claim 84 that the getter region contact the plate or be connected to it by material directly underlying the getter region. This is a separate reason why Claim 84 is not anticipated by the display in Fig. 6 of Ito.

As far as Applicants' Attorney can determine, none of the other devices disclosed in Ito meets all the limitations of Claim 84. Accordingly, Ito does not anticipate Claim 84.

Nothing in Ito would provide a person skilled in the art with any motivation or incentive for modifying the display in Fig. 6 of Ito so that gettering second conductive substrate 4 overlies more than one gate electrode 3. Placing conductive substrate 4 above

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two or more of gate electrodes 3 would increase the display complexity and fabrication cost without providing any apparent performance advantage.

Likewise, nothing in Ito would provide a person skilled in the art with any motivation or incentive for modifying Ito's display in Fig. 6 so that gettering second conductive substrate 4 contacts base part 46 or is connected to it by material directly underlying conductive substrate 4. Modifying Ito's display in Fig. 6 so that conductive substrate 4 contacts base part 46 or is connected to it by material directly underlying substrate 4 would not provide any evident performance benefit. In addition, contacting substrate 4 to base part 46 or connecting substrate 4 to base part 46 by material directly underlying substrate 4 would entail substantially rearranging the display components and would greatly increase the display complexity and design/fabrication cost without providing an accompanying performance enhancement. Claim 84 is thus not obvious in view of Ito. Consequently, Claim 84 is patentable over Ito.

Claims 97 and 98 both depend (directly or indirectly) from Claim 84. The same applies to new Claims 369 and 370. Dependent Claims 97, 98, 369, and 370 are therefore patentable over Ito for the same reasons as Claim 84.

Additionally, Claim 369 recites that "each control electrode selectively extracts electrons from associated ones of the electron-emissive elements or selectively passes electrons emitted by the associated electron-emissive elements".

As specified in the paragraph bridging cols. 5 and 6 of Ito, protrusions 5 exposed through openings 3a in gate electrode 3 situated below gettering second conductive substrate 4 collect electrons during gettering operation. Nowhere, as far as Applicants' Attorney can determine, does Ito disclose that protrusions 5 exposed through openings 3a in gate electrode 3 below conductive substrate 4 emit electrons selectively extracted or selectively passed by that gate electrode 3. Consequently, the display of Fig. 6 of Ito does not meet the requirement of Claim 369 that each control electrode selectively extract electrons from associated ones of the electron-emissive elements or selectively pass electrons emitted by the associated electron-emissive elements. This establishes a separate basis for allowing Claim 369 over Ito. The same applies to Claim 370 because it depends from Claim 369.

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Independent Claim 99, as amended, is repeated below:

99. A structure comprising:  
a plate;  
a group of electron-emissive elements overlying the plate;  
a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate;  
a raised section overlying the plate and extending over at least part of each control electrode; and  
a getter region overlying the plate, the getter region situated at least partially in a plurality of primary openings in the raised section or/and exposed through the primary openings to space above the raised section.

With respect to Claim 99, the Examiner asserts on page 3 of the Office Action that:

Figure 2 of Ito shows a structure comprising a plate (112); a group of electron-emissive elements (113) overlying the plate; a group of laterally separated control electrodes (115) for extracting electrons from the electron emissive elements or for passing electrons emitted by the electron-emissive elements, the control electrodes overlying the plate; a raised section (114) overlying the plate and extending over at least part of each control electrode; and a getter region (111) overlying the plate and exposed through or/and situated in a plurality of primary openings (not labeled) in the raised section.

From this assertion, it appears that the Examiner is analogizing cathode electrode 112, upper insulator 114, and gettering focusing electrode 116 in the (prior art) display shown in Fig. 2 of Ito respectively to the plate, raised section, and getter region of Claim 99.

Claim 99 previously recited that the getter region was "exposed through or/and situated in a plurality of primary openings in the raised section". The word "exposed" in conjunction with the language following "exposed" was intended to mean that the getter region is exposed through the recited openings in the raised section to space overlying the raised section. To the extent that this meaning may have been unclear, Claim 99 has been amended to explicitly recite that the getter region is situated at least partially in the primary openings in the raised section or/and exposed through those openings to space above the raised section.

Openings do extend through upper insulator layer 114 in the display shown in Fig. 2 of Ito. However, gettering focusing electrode 116 in that display lies on upper insulator layer 114. Focusing electrode 116 is not exposed to space above upper insulator layer 114 by way

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of the openings through upper layer 114. Hence, the display shown in Fig. 2 of Ito does not meet the requirement of Claim 99 that the getter region be situated at least partially in the primary openings in the raised section or/and exposed through those openings to space above the raised section. Nor do any of the other devices described in Ito appear to meet this requirement. Accordingly, Ito does not anticipate Claim 99.

Modifying the display shown in Fig. 2 of Ito so as to have focusing electrode 116 be exposed to space above upper insulator layer 114 by way of the openings through upper insulator layer 114 would entail a substantial rearrangement of the components of that display. Nothing in Ito would provide a person skilled in the art with any suggestion or incentive for making such a modification. Ito therefore does not make Claim 99 obvious. As a result, Claim 99 is patentable over Ito.

New Claims 371 - 375 all depend (directly) from Claim 99. Hence, dependent Claims 371 - 375 are patentable over Ito for the same reasons as Claim 99.

Also, Ito does not disclose the further limitation of any of Claims 371 - 373. In particular, no part of gettering focusing electrode 116 in the display of Fig. 2 of Ito lies in any of the openings through upper insulator layer 114. Consequently, Ito does not disclose the further limitation of Claim 371 that "part of the getter region is situated in each primary opening".

Nor does gettering focusing electrode 116 in the display of Fig. 2 of Ito overlie cathode electrode 112 at any location between where any pair of gate electrodes 115 overlie cathode electrode 112. Ito therefore does not disclose the further limitation of Claim 372 that "the getter region overlies the plate at a location between where a consecutive pair of the control electrodes overlie the plate". Inasmuch as an operable electron-emissive element 113 is exposed through each opening in upper insulator layer 114 in the display of Ito's Fig. 4, Ito does not disclose the further limitation of Claim 373 that "no operable electron-emissive element is exposed through any of the primary openings". Separate grounds are thereby present for allowing Claims 371 - 373 over Ito.

Independent Claim 114 is repeated below:

114. A structure comprising:
  - a plate;
  - a dielectric layer overlying the plate;

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a group of electron-emissive elements overlying the plate and situated mostly in respective laterally separated openings in the dielectric layer; and

a getter region overlying at least part of the dielectric layer and contacting, or connected by directly underlying electrically non-insulating material to, the dielectric layer, at least part of the getter region situated above a location between a pair of the openings in the dielectric layer.

With respect to Claim 114, the Examiner asserts on page 3 of the Office Action that:

Figure 3 of Ito shows a structure comprising a plate (2); a dielectric layer (6) overlying the plate; a group of electron-emissive elements (5) overlying the plate and situated mostly in respective laterally separated openings (3a) in the dielectric layer; and a getter region (4) overlying at least part of the dielectric layer and contacting, or connected by directly underlying electrically non-insulating material to, the dielectric layer, at least part of the getter region situated above a location between a pair of the openings in the dielectric layer.

From this assertion, it appears that the Examiner is analogizing first conductive substrate 2, insulator layer 6, protrusions 5, and gettering second conductive substrate 4 in the vacuum pumping device of Fig. 3 of Ito respectively to the plate, dielectric layer, electron-emissive elements, and getter region of Claim 114.

Claim 114 requires that the getter region (physically) contact the dielectric layer or be (physically) connected to it by electrically non-insulating material directly underlying the getter region. Gettering second conductive substrate 4 in the vacuum pump of Fig. 3 of Ito is spaced vertically apart from insulator layer 6. As a result, the vacuum pump in Ito's Fig. 3 does not meet the requirement of Claim 114 that getter region contact the dielectric layer or be connected to it by electrically non-insulating material directly underlying the getter region. No other device disclosed in Ito appears to meet this requirement and the earlier requirement of Claim 114 that the electron-emissive elements be situated mostly in the openings in the dielectric layer. Ito thus does not anticipate Claim 114.

Furthermore, nothing in Ito would provide a person skilled in the art with any motivation or incentive for modifying the vacuum pump in Fig. 3 of Ito so that gettering second conductive substrate 4 contacts insulator layer 6 or is connected to it by electrically non-insulating material directly underlying conductive substrate 4. Similar to what was said above about the display in Fig. 6 of Ito in connection with Claim 84, modifying the vacuum pump of Ito's Fig. 3 so that conductive substrate 4 contacts insulator layer 6 or is connected to it by electrically non-insulating material directly underlying substrate 4 would not provide any evident performance benefit. Additionally, contacting conductive substrate 4 to insulator

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layer 6 or connecting substrate 4 to layer 6 by electrically non-insulating material directly underlying substrate 4 would entail substantially rearranging the display components and would greatly increase the display complexity and fabrication cost without providing an accompanying performance enhancement. For these reasons, Claim 114 is not obvious in view of Ito. As a result, Claim 114 is patentable over Ito.

Claim 281 depends (directly) from Claim 114. New Claims 376 - 379 similarly depend (directly or indirectly) from Claim 114. Hence, dependent Claims 281 and 376 - 379 are patentable over Ito for the same reasons as Claim 114.

In addition, Claim 377 recites that the claimed structure includes "a group of laterally separated control electrodes for selectively extracting electrons from the electron-emissive elements or for selectively passing electrons emitted by the electron-emissive elements, at least part of each control electrode overlying the dielectric layer, the electron-emissive elements being exposed through openings in the control electrodes". Claim 378 which depends from Claim 377 more specifically recites that "each control electrode selectively extracts electrons from associated ones of the electron-emissive elements exposed through the openings in that control electrode or selectively passes electrons emitted by the associated electron-emissive elements".

The vacuum pumping device in Fig. 3 of Ito has only one gate electrode 3 and therefore does not meet the requirement of Claim 377 that there be multiple control electrodes.

Furthermore, protrusions 5 collect electrons in the vacuum pump in Fig. 3 of Ito. Again, see the paragraph bridging cols. 5 and 6 of Ito. As mentioned above, nowhere does Ito appear to disclose that protrusions 5 in the vacuum pump of Fig. 3 emit electrons selectively extracted or selectively passed by that gate electrode 3. Even if Ito's vacuum pump in Fig. 3 did have multiple gate electrodes 3, the vacuum pump would not meet the requirement of Claim 377 that the control electrodes selectively extract electrons from the electron-emissive elements or selectively pass electrons emitted by the electron-emissive elements.

Nor would Ito's vacuum pump in Fig. 3 meet the more specific requirement of Claim 378 that each control electrode selectively extract electrons from associated ones of the electron-emissive elements or selectively pass electrons emitted by the associated electron-

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emissive elements. Separate bases are thereby provided for allowing Claims 377 and 378 over Ito. The same applies to Claim 379 due to its dependence from Claim 378.

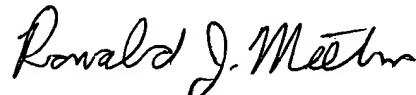
In short, Claims 84, 97 - 99, 114, 281, and 369 - 379 have been shown to be patentable over the applied art. Accordingly, Claims 84, 97 - 99, 114, 281, and 369 - 379 should be allowed along with already allowed Claims 1 - 3, 6, 7, 10 - 17, 22, 26 - 32, 35 - 40, 266, 289, 310, and 319 so that the application may proceed to issue.

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